

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Claims 1 and 2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,153,326 to Matsukawa et al. (hereinafter, "Matsukawa") in view of U.S. Patent No. 6,395,416 to Tanemoto et al. (hereinafter, "Tanemoto"). The rejections are traversed for the following reasons.

The invention defined in claim 1 is directed to a fuel cell with a fuel cell separator having a metal central part and a rubber peripheral part, with gas passages and reaction product passages provided by the peripheral part. The rubber peripheral portion includes an outer portion that extends away from the central part with the gas passages and the reaction passages formed through the outer portion. Claim 1 has been amended to define projecting passage seal parts on a first face of a fuel cell separator and passage recesses on a second face of the fuel cell separator. The projecting passage seal parts and the passage recesses are formed along the edges of the gas and reaction product passages. The projecting passage seal parts press against the passage recesses of an adjacent fuel cell separator through gas passages and reaction product passages of an electrolytic membrane. Support for the amendments is found on page 11, lines 4 to 18 and in Fig. 2 of the present application. Further, claim 1 (as well as claims the remainder of the claims) have been amended so as to claim a fuel cell, as opposed to merely a

fuel cell separator. The title of the application has similarly been amended.

The amendment to claim 1 circumvents the present rejection based on the cited art. However, even if the amendment does not circumvent the rejection, the amendment presents claim 1 in a better form for consideration on appeal.

Therefore, applicant respectfully requests that the Examiner admit the amendment and consider claim 1 as amended.

Matsukawa is cited for teaching a fuel cell separator with a metal central part and a rubber peripheral portion. However, Matsukawa fails to teach that the rubber peripheral portion extends beyond the metal central portion such that "an outer portion of the peripheral part extends away from the central part, and the gas passages and reaction product passages are formed through said outer portion", as required by claim 1. For this feature, the Examiner cites to Tanemoto. Tanemoto is cited for teaching a fuel cell separator having a peripheral portion that extends away from a central portion, with gas and reaction product passages formed in the peripheral part.

However, the combined references fail to teach or suggest the amended features of claim 1. Particularly, the combined references do not teach or suggest the projecting passage seal parts and the passage recesses as recited in claim 1. With reference to Figs. 3 and 4 of Matsukawa and Fig. 4C of Tanemoto, both of the references only teach the peripheral portion having flat upper and lower surfaces (corresponding to the first and second faces of claim 1) free of projections or recesses in the vicinity of the gas and reaction product passages. Accordingly, the combined references do not explicitly teach, nor do they suggest to a person of ordinary skill in the art, the projecting passage seal parts and the passage recesses

of claim 1.

Therefore, the combined references fail to teach or suggest each and every feature recited in claim 1. Accordingly, a *prima facie* case of obviousness has not been established to support the rejection of claim 1. Reconsideration and withdrawal of the rejection of claim 1 is requested. Claim 2 depends from claim 1 and is likewise considered allowable over the art.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Tanemoto, and further in view of U.S. Patent No. 6,113,827 to Styczynski (hereinafter, "Styczynski"). The rejection is traversed for the following reasons.

Claim 3 is directed to a method for manufacturing the fuel cell defined in claim 1. The claim recites a method whereby the metal central part of the fuel cell separator is disposed in a cavity of an injection-molding mold. The inside of the cavity is maintained at a low temperature, and the liquid silicone rubber is injected into the cavity. The low temperature of the cavity prevents the silicone rubber from reactively setting, and allows the liquid silicone rubber to maintain a low viscosity. The liquid silicone rubber is guided past an edge part of the central part. Gas and reaction product passages are formed through the silicone rubber peripheral portion in a position past the edge part of the metal central part. The method is completed by heating the inside of the cavity to reactively set the silicone rubber guided to the edge part of the central cavity. As with claim 1, claim 3 has been amended to define projecting passage seal parts and passage recesses.

Matsukawa teaches injection molding rubber layers on both sides of a metal central part, at edge portions of the metal central part. Tanemoto is cited for

teaching that the liquid that is injected into the mold is guided past the edge of the central part. Styczynski is cited for teaching a step of heating a mold cavity to reactively set injection molded silicone rubber. Styczynski does not teach a fuel cell structure, nor does Styczynski teach a method for manufacturing a fuel cell separator. Accordingly, the below discussion will point out the shortcomings of the Matsukawa and Tanemoto patents alone, as the Styczynski patent does not remedy any of the shortcomings.

As argued above in favor of the patentability of claim 1, neither Matsukawa nor Tanemoto teach or suggest a method of forming a fuel cell separator having the projecting passage seal parts or the passage recesses as required by claims 1 and 3. As these features have been added to claim 3, it is asserted that claim 3 recites method steps that are not taught or suggested by the combined references. As such, a *prima facie* case of obviousness in support of the rejection of claim 3 has not been established. Therefore, the obviousness rejection of claim 3 lacks merit. Reconsideration and withdrawal of the rejection is requested.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Styczynski. The rejection is traversed for the following reasons.

The inventive method of claim 4 is directed to the manufacture of a fuel cell, and recites that the liquid silicone rubber is guided to an edge part of the central part, and that the central part is heated to reactively set the silicone rubber. As with claims 1 and 3, claim 4 has been amended to define projecting passage seal parts and passage recesses.

As argued above in favor of the patentability of claim 3, the combination of

Matsukawa and Styczynski fail to teach or suggest these features presently required by claim 4. Thus, the combined references fail to teach or suggest all features required by claim 4. Consequently, a *prima facie* case of obviousness supporting the rejection of claim 4 has not been made. Reconsideration and withdrawal of the rejection is requested.

Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Tanemoto, as applied to claims 1 and 2, and further in view of U.S. Patent No. 7,226,685 to Kuroki et al. (hereinafter, "Kuroki"). The rejection is traversed for the following reasons.

Claims 5 and 6 depend from claim 1. Thus, to render either of the claims obvious, the cited references must teach or suggest every element of claim 1. In this regard, Kuroki, which is cited for teaching connection through a support hole, fails to remedy the shortcomings of Matsukawa and Tanemoto as applied to claim 1.

Thus, claim 1 recites features that are not taught or suggested by the combined references. Accordingly, claims 5 and 6, which include all features of claim 1, likewise recite features not taught or suggested by the cited references. For this reason, claims 5 and 6 are allowable over the art. Reconsideration and withdrawal of the rejections of claims 5 and 6 is requested.

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Styczynski, as applied to claim 4, and further in view of Tanemoto. The rejection is traversed for the following reasons.

Claim 7 depends from claim 4. Therefore, to render claim 7 obvious, the combined references must teach or suggest each and every element of claim 4. With reference to the discussion above, claim 4 has been shown to be allowable

over Matsukawa and Styczynski. Further, it is asserted that Tanemoto fails to remedy the shortcomings of Matsukawa and Styczynski in regards to claim 4. Particularly, Tanemoto fails to teach or suggest the projecting passage seal parts and passage recesses required by claim 4.

Therefore, as the combined references fail to teach or suggest all elements recited in claim 4, claim 7 likewise includes features that are not taught or suggested by the references. Accordingly, claim 7 is not rendered obvious by the combined references. Reconsideration and withdrawal of the rejection of claim 7 is requested.

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Tanemoto and further in view of Styczynski, as applied to claim 3, and further in view of Kuroki. The rejection is traversed for the following reasons.

Claim 8 depends from claim 3, and further includes a step of positively interconnecting the central and peripheral parts through a hole defined in the central part at a position that is inwardly adjacent to the edge part of the central part. As Matsukawa, Tanemoto, and Styczynski fail to teach this step, the Examiner cites to Kuroki. However, Kuroki fails to remedy the shortcomings of Matsukawa, Tanemoto, and Styczynski in regards to claim 3.

As claim 3 is allowable over the references, claim 8, which depends therefrom, is likewise considered allowable. Accordingly, reconsideration and withdrawal of the rejection of claim 8 is requested.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsukawa in view of Tanemoto and further in view of Styczynski, as applied to claim 4, and further in view of Kuroki. The rejection is traversed for the following

reasons.

Claim 9 depends from claim 4. Therefore, to render claim 9 obvious, the combined references must teach or suggest each and every element of claim 4. With reference to the discussion above, claim 4 has been shown to be allowable over Matsukawa, Tanemoto, and Styczynski. Further, as has been discussed above, it is asserted that Kuroki fails to remedy the shortcomings of Matsukawa, Tanemoto, and Styczynski in regards to claim 4.

Therefore, as the combined references fail to teach or suggest all elements recited in claim 4, claim 9 likewise includes features that are not taught or suggested by the references. Accordingly, claim 9 is not rendered obvious by the combined references. Reconsideration and withdrawal of the rejection of claim 7 is requested.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. SHM-15820.

Respectfully submitted,

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